XVII.—*On a new Leptolepid Fish from the Weald Clay of Southwater, Sussex.* By A. Smith Woodward, LL.D., F.R.S.

[Plate I.]

Thin cycloid scales which might have belonged to a *Leptolepis*-like fish have already been noticed in the English Wealden formation, but no complete example of a Wealden member of the Leptolepidæ has hitherto been described. A well-preserved specimen, however, which may be referred to the family just mentioned, has lately been found in the Weald Clay at Southwater, near Horsham; and I am indebted to the Directors of the Southwater Brick and Tile Co., Ltd. (through Mr. C. H. Aldersmith, A.M.I.C.E.), for the opportunity of studying this interesting fossil, which has now been presented to the British Museum.

The new specimen is preserved in counterpart in a slab of clay, and its best half is shown of one half nat. size in Pl. I. fig. 1. It is exhibited in direct side-view, only lacking the anterior part of the head and the hinder half of the caudal fin. The maximum depth of the trunk is contained somewhat less than three times in the length from the pectoral arch to the base of the caudal fin, and would probably equal about one fifth of the total length of the fish. The same depth is not quite three times as great as the depth of the caudal pedicle. The fragmentary remains of the head show that the mandibular suspensorium is inclined forwards, so that the articulation of the lower jaw must have been directly beneath the hinder part of the orbit. The hyomandibular bone (*hm.*) bears a long process for the suspension of the operculum (*op.*), which is shown in impression, trapezoidal in shape, and about as deep as broad. The preoperculum (*pop.*) has a long upright ascending limb, expanding below into a triangular plate. The suboperculum (*sop.*), best seen in the counterpart not figured, must have been about four times as broad as deep. Fifteen branchiostegal rays (*br.*) can be counted, the upper seven being expanded and in close series, the lower eight being narrower bars and more widely spaced. The opercular apparatus is quite smooth, not ornamented. The total number of vertebræ is about sixty, half being in the abdominal region. The centra are about as long as deep in the anterior part of the caudal region, but are somewhat shorter than deep both in the abdominal and

in the hinder part of the caudal region. They are well ossified and their primitive double-cone is strengthened by secondary bone arranged in fine, close, longitudinal ridges (fig. 2). The ribs are stout, apparently borne on very short transverse processes, and clearly extending to the ventral border of the fish. The fixed neural and hæmal arches in the caudal region are also very stout and gently arched. The hinder extremity of the vertebral column turns only slightly upwards, and its hæmal arches are somewhat expanded without fusion into plates. The intermuscular bones are almost completely obscured by the scales in the fossil, but there are traces of them above the vertebral column in the abdominal region, and both above and below this column in the caudal region. The post-temporal (*pt.*) is a thick plate, almost triangular in shape, and the supraclavicle (*scl.*) is a deep and narrow bone. The clavicle (*cl.*), as shown in impression, is expanded into a large smooth plate above the pectoral fin, which is inserted close to the ventral border. When adpressed to the trunk this fin extends halfway to the insertion of the pelvic fins; its rays have a very long and stiff base, but are finely divided and articulated at the extremity. The pelvic fins (*plv.*) are smaller than the pectorals, though similar in character, and inserted midway between the pectorals and the anal. The dorsal fin (*d.*) arises well in front of the middle point between the occiput and the caudal fin, somewhat in advance of the insertion of the pelvic fins. It comprises eighteen to twenty rays, of which the three foremost are closely pressed together, undivided, and gradually increase in length. The length of the fourth or longest ray much exceeds half the depth of the trunk at its insertion, and, like the following rays, is finely divided and articulated distally. The anal fin (*a.*) resembles the dorsal in character, but is much smaller and comprises only thirteen or fourteen rays. It is far behind the dorsal, and its origin is much nearer to that of the caudal than to the insertion of the pelvic fins. The remains of the caudal fin-rays (*c.*) show that they were comparatively stout. There are no fulcra on any of the fins. The scales are relatively large, cycloid, and smooth, occasionally with feeble traces of a slight radiating pectination at the hinder border, but usually exhibiting structural lines, including wavy concentric markings. They are scarcely displaced in the fossil, and are seen to be deeply overlapping, with the exposed area narrow and deep. The "lateral line" is scarcely traceable, but seems to produce a slight depression along some scales in a series above the vertebral column.

So far as the skeleton is preserved there is nothing in the

Wealden fossil just described to prevent its reference to an Elopine or Clupeoid fish; but as the European Wealden fish-fauna is essentially of a Jurassic type *, the specimen is more likely to belong to a member of the Leptolepidæ, with which it equally agrees. The skeleton of the trunk resembles that both of *Leptolepis* itself and of *Æthalion*; but the lack of jaws prevents an exact determination of the genus. The number of the vertebræ exceeds that of all known species of both genera except *Æthalion Vidali* †, and the relative shortness of the hinder caudal, as well as the anterior abdominal vertebral centra, is a feature peculiar to the new Wealden fish. The fins, as described, also distinguish this fossil from all species with which it can be compared. It therefore represents a new species, which I propose to name *Leptolepis valdensis* until the discovery of the head determines its precise generic position.

EXPLANATION OF PLATE I.

Fig. 1. *Leptolepis valdensis*, sp. n.; right side view of type specimen, one half nat. size.—Weald Clay; Southwater, Sussex. [Brit. Mus. no. P. 10440.] *a.*, anal fin; *br.*, branchiostegal rays; *c.*, caudal fin; *cl.*, clavicle; *d.*, dorsal fin; *hm.*, hyomandibular; *op.*, operculum; *plv.*, pelvic fins; *pop.*, preoperculum; *pt.*, post-temporal; *scl.*, supraclavicle; *sop.*, suboperculum.

Fig. 2. Ditto; caudal vertebræ of same specimen, nat. size.

XVIII.—*On new Species of* Histeridæ *and Notices of others.* By G. Lewis, F.L.S.

This is the thirty-first paper of this series, which dates from the year 1884. In the Histeridæ the absence or otherwise of prosternal striæ is sometimes of great significance, and serves to distinguish both genera and species. Thus, in *Teretriosoma* the striæ are wanting, in *Teretrius* they are well marked and very useful as specific characters; and in *Paromalus*, as the genus is now defined, the prosternal keel is marginate—that is, the striæ meet at both ends. In *Grammostethus*, also, the prosternal striæ are of importance, as being constantly similar in a series of fourteen cognate species, but which possess, however, *inter alia*, good specific characters.

* A. S. Woodward, "Note on the Affinities of the English Wealden Fish Fauna," Geol. Mag. [4] vol. iii. (1896) pp. 69–71.

† H. E. Sauvage, "Noticia sobre los Peces de la Caliza litográfica de la Provincia de Lérida," Mem. R. Acad. Cienc. Barcelona, [3] vol. iv. no. 35 (1903), p. 13, pl. ii. fig. 2.